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MISCELLANEOUS.—R. Brauns proposes[1] the use of methylene iodide as a means of separating the constituents of rocks. The specific gravity of the liquid is 3.33 at the ordinary temperature, varying from 3.3485 at 5° to 3.3045 at 25°. The author claims for this substance advantages over the heavy solutions now in such general use, while he recognizes at the same time the disadvantages of the necessity for the use of benzine in diluting (neither alcohol nor water can be used for this purpose). The physical properties of the substance are given in detail, and an experiment made to test its practicability as a medium for the separation of minerals of high specific gravity shows it to work very satisfactorily.

BOTANY.[2]

AIDS TO BOTANIZING.—The young collector prizes everything which will help him in his search for specimens and his efforts to prepare and preserve them in his herbarium. The last number (June) of the *Botanical Gazette* ought to satisfy every demand of the inquirer after the best botanizing methods. The general methods of making specimens are treated in notes and communications from ten different botanists. How to collect certain plants receives the attention of twenty-one specialists. The Gray Herbarium and the National Herbarium are described with some fullness, and the remaining pages are filled with numerous short notes, all bearing upon the general topic of the number. It is impossible to summarize the information brought together in this valuable series of communications. Perhaps the one fact most prominently brought out, is that good specimens are made by *care and painstaking*, rather than by following this or that particular method. The lesson of greatest importance to the beginner taught in this herbarium number, is that he must make *good specimens.* It is not enough to gather samples and dry them; the work must be well done—artistically done, one might almost say.

Another lesson which the young botanist will learn, is that botanizing, to-day, is somewhat enlarged above what the fathers knew and practiced it. Flowering plants, ferns, mosses, liverworts, lichens, fungi—big and little, seaweeds—from the sea itself and from the fresh water—all these are to be looked for, gathered, prepared, mounted, arranged.

The Botanical Collectors' Hand-book, published a few years ago by Professor W. W. Bailey, will also be found to contain much of value to the young collector. Many of the suggestions it contains will materially shorten the work of the beginner.

In the Bulletin of the Torrey Botanical Club, the subject of herborizing was well treated by Lyman Hoysradt eight years ago, and the beginner will do well to read carefully the directions there given.

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[1] Neues Jahrb. f. Mineralogie, etc., 1886, II, p. 72.

[2] Edited by Professor CHARLES E. BESSEY, Lincoln, Nebraska.

Much of what was included in Mr. Hoysradt's articles is to be found, along with a good deal of additional matter, in Section IV, of the tenth chapter of the new edition of Gray's Botanical Text-book, Vol. I. For flowering plants, the treatment here is probably the most satisfactory to be found anywhere, and no one can afford to omit its careful perusal.

A BROADER ELEMENTARY BOTANY.—In the schools and colleges of this country the teaching of elementary botany is still but little improved, however much of change for the better the higher departments may show. In fitting up our laboratories, providing means for studying cells and tissues, gathering collections of all sorts of materials and specimens, from German herbarium specimens of bacteria to trunks of great trees, we have done well for the classes of somewhat advanced students, but have we not in our zeal for improvement in these lines forgotten or ignored elementary botany. The beginner finds that with all this talk of improved methods he is still obliged to pursue the same old tread-mill course with its endless list of bare technicalities and meaningless botanical jargon. Beyond his field of elementary work he sees evidence of great activity among teachers, but *his* work remains almost precisely what it was a score of years ago, in spite of the fact that in this period the great science of plants has undergone a complete transformation.

What should an elementary course in botany include? The answer to this question will vary somewhat according to the particular penchant of the teacher, but certainly all who teach to a purpose will agree with the following propositions: 1. Elementary botany must be, to a certain extent, complete in itself, inasmuch as the greater number of students pursue the subject no further. 2. It must be properly a fitting introduction to the higher work.

The experience of the writer has brought him to the following conclusions, viz: 1. That both of the foregoing objects require a general view of the vegetable kingdom. 2. That both likewise demand that this general view be secured by the method of taking particular species and using them to illustrate groups. 3. That the student should "collect" specimens in every department of the vegetable kingdom, not so much for the sake of making specimens, as for the purpose of becoming acquainted with their general appearance, structure and habits. 4. That the student should become familiar with the methods of describing and identifying natural objects by a closer study of a few species of some group. In practice the flowering plants may well serve for the latter, although there is no good reason why a student might not take any other group whose individuals are abundant, and the species of which have been well described.—*Charles E. Bessey.*

WATSON'S CONTRIBUTIONS TO AMERICAN BOTANY, XIII.—This contribution, published June 2, in the Proceedings of the American Academy of Arts and Sciences, Vol. XXI, includes the following, viz: I. List of plants collected by Dr. Edward Palmer in Southwestern Chihuahua, Mexico, in 1885. II. Descriptions of new species of plants, chiefly from the Pacific States and Chihuahua. III. Notes upon plants collected in the Department of Yzabal, Guatemala, February to April, 1885—I. Ranunculaceæ to Connaraceæ. IV. Notes upon some palms of Guatemala. Many new species are described in these four papers, and in the third and fourth we have an introduction to a little-known botanical field. The notes upon the palms of Guatemala are particularly interesting.

BOTANY AT THE APPROACHING MEETING OF THE A. A. A. S.—The conditions are all favorable to an excellent meeting at Buffalo in August, and a large attendance of botanists is confidently expected. It is hoped that there will be more botanists present than at any previous meeting. Let it be remembered that there are two organizations before which botanical papers may be read, viz: The Biological section (F) of the Association, and the Botanical Club. Before the latter all the shorter and less important matters should be brought, such as local lists, notes, notelets, laboratory suggestions, etc., etc. Let only *the best* papers be entered for reading before Section F. Let the effort be continued to rescue botany from the discredit into which it had fallen. Let the charge of superficiality in papers and discussions be made no longer true.

BOTANICAL NEWS.—Millspaugh's American Medicinal Plants, published by Bœrick & Tafel, of Philadelphia, has reached its fourth fascicle, carrying the number of plants thus far figured and described up to one hundred and twenty. The work is very well done, and merits the success which it has evidently attained.——A paper of a good deal of value to algologists was published recently by Dr. Farlow, under the title of Notes on Arctic Algæ. It is based principally on collections made at Ungava bay by Mr. L. M. Turner.——It is gratifying to note that in the Proceedings of the American Forestry Congress, held in Boston, September, 1885, some of the papers published appear to have a permanent value. It encourages one to hope that the days of fine talk alone among professional foresters in this country have passed away, and that henceforth we may look for work and papers which have scientific value.——Professor L. H. Bailey, in a lecture entitled "The Garden Fence," read at the meeting of the Massachusetts State Board of Agriculture, December, 1885, makes a strong plea for a botany broad enough to take in the plant under cultivation, and for a horticulture scientific enough to demand and use the laws and facts of scientific botany.——The Flora of the Yellowstone National Park, by Frank Tweedy, is a neat pamphlet of seventy-eight pages, enumerating 657 species of Phanerogams and Pteridophytes found growing in the park. The main list is preceded by special lists of the forest trees, alpine flora, bog flora, flora of the hot springs and geysers, the grasses, etc.——A new edition of the London Catalogue of British Plants is noticed by the English botanical journals. It is edited by Frederick J. Hanbury, and is published by Bell & Son, of London.——The editor of *Grevillea* (146 Junction road, London, N., England) offers for sale a number of botanical books of some rarity, together with others not so rare, but quite as desirable; also, several valuable exsiccati.——Douglas H. Campbell published in the June Bulletin of the Torrey Botanical Club a neatly-made-out list of the plants of the Detroit river. It is surprisingly large. ——The *Journal of Mycology* for June continues the synopsis of the North American Hypocreaceæ, by Messrs. Ellis and Everhart.——The editor of this department would again ask collectors to remember his request for specimens of Cuscutæ in flower and fruit. Dense flowering forms of each species are particularly desired.

ENTOMOLOGY.

HUBBARD'S INSECTS AFFECTING THE ORANGE.[1]—This elaborate report does great credit, not only to the author but to the U. S. Entomologist, who has projected the series of special reports of which this forms the most important. Mr. Hubbard's work was confined to Florida, and his report is thoroughly practical and forms a hand-book adapted for those whose knowledge of entomology is but slight.

A host of insects prey upon the orange, and of those directly injurious the list is a long one. In the winter little injury is experienced, but in February most of those kinds injurious to the orange make their appearance, and in May and June attain their greatest activity.

To the entomologist the portions of this report most interesting is the account of the rust mite, *Typhlodromus oleivorus* Ashm., of *Papilio cresphontes*, *Lagoa opercularis*, the account of the different species of bag-worms, or Œcetici; the different beetles boring in the wood and bark; the parts concerning the two species of Psocus, whose habits are described; also the notices and illustrations of other species, both destructive and beneficial.

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[1] U. S. Department of Agriculture. Division of Entomology. Insects affecting the orange. Report on the insects affecting the culture of the orange and other plants of the citrus family, with practical suggestions for their control or extermination, made, under direction of the entomologist, by H. G. Hubbard, with fourteen plates and numerous wood cuts. Washington, 1885. 8 vo, pp. 218.